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Conference Papers

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# **6TH INTERNATIONAL HEAVY HAUL CONFERENCE**

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Session 1.2

HEAVY HAUL STRATEGIC

RESTRUCTURING THE RAIL INDUSTRY: THE U.S. EXPERIENCE

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## INTRODUCTION:

Good morning. It is a pleasure to be here in your lovely country. Today, railways and their management are under siege. In most countries, market share continues to decline. Government policies often ~ promote other transportation modes. And governments seem determined to reduce or eliminate the deficits of publicly operated railways.

Against this backdrop, a variety of solutions have emerged. Some are more creative than they are realistic.

Even many of you in the heavy haul business traditionally the most profitable and efficient segment of the railway, will be impacted by the outcome.

## INDUSTRIAL AGE MEETS INFORMATION AGE: HEAVYHAUL AS SURVIVAL STRATEGY FOR FREIGHT RAILWAYS

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## **Abstract**

Global competition dismisses tolerance for non-competitive transport modes. Information technology fragments value chains and disintermediates ineffective players, thereby destabilizing or destroying traditional business models. In that milieu, railways typically adapt to strategic challenges by deregulation and competition. It has forced railways to re-examine their core competencies and to add value to their traditional offerings. Within a strategic consistency paradigm, the writer examines freight railways vis-a-vis road-haulier competitors. From the premise that freight railways require impregnable competitive advantage to survive, he formulates the hypothesis that they can only survive in the information age where they can leverage heavy-haul technology to advantage. At present this appears viable only in high-volume, dedicated, bulk-commodity traffic and double-stack intermodal traffic.

## **IMPLEMENTATION OF THE TOTAL QUALITY MANAGEMENT AT THE CARAJAS RAILWAY**

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## **Abstract**

This paper reports on the planning developed to implement Total Quality Management at a company rendering freight and passenger railroad transportation services which is the Carajas Railway Superintendency (EFC). The objective was to present implementation stages for this management model to companies which may want to engage in similar programs. The considerable productivity improvement at the Carajas Railway over the years, which are shown herein, corroborates our commitment to Quality.

## **RAILWAY PRIVATIZATION - THE CN EXPERIENCE**

**John A. Reoch**

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## **Abstract**

The 1995 privatization of the Canadian National Railway Company has been termed "the most successful initial public offering in Canadian history".

CN was formed in 1922 as a result of the failure of several private railway companies which had been created during the frenzied railway-building period of the late 19th and early 20th centuries. The companies were assembled into Canada's largest, and presently North America's only transcontinental railway, which continued to be operated as a government-owned Crown Corporation until 1995. This paper will describe the process that led to CN becoming a fully privatized and sustainably profitable railway company in the highly competitive North American Freight transportation market.

On the international scene, CN's consulting and railway services subsidiary, CANAC INTERNATIONAL INC., has been involved in the privatization of state-owned railways in several countries including Argentina, Togo, Mexico and restructuring of several other railways throughout the World.

This paper will also describe the principles of successful privatization in those circumstances.

STRATEGIC OBJECTIVES OF CHINA'S RAILWAY HEAVY HAUL  
TRANSPORTATION BEYOND 2000

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## **Abstract**

The paper recalls the three phases experienced by the Chinese railways in heavy haul development since 1980 and the three modes it so employed and analyzes the great technical progress made in heavy haul operation in the respect of locomotives and cars, track technology incorporated, signal control facilities, and power supply systems for electrified lines, which paves the way technically for the development of heavy haul. It points out at the same time that the Chinese freight flow conditions have also provided sufficient external conditions for heavy haul operation. The paper focuses on the railway network program of heavy haul operation in China around the year 2000 and its consequence analysis. In the end it points out that the study on the incorporated technologies for 25t axle load heavy haul operation is a technological development target for the Chinese railways entering the next century.

Session 1.3a

**SUBSTRUCTURE: SUBGRADE**

**REHABILITATION DESIGN OF HIGH EMBANKMENTS AND A  
COAL LINE TRACK FORMATION**

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## Abstract

The paper describes the unexpected failure of high embankments which had given trouble-free service of some ten years. It is shown that the progressive collapse settlement and subsequent failure of the low density fills due to rainwater ingress over the years can be successfully analysed by means of a sophisticated finite element model, resulting in novel and cost-effective rehabilitation by means of reinforcing with steel strips as well as soil nails. The track fomation is shown to be equally sensitive to moisture, coupled with an unbalanced structural design, ultimately results in distress being transposed to the rail track. Dynamic analyses in 3D and in situ testing is being utilised to cost-eflectively upgrade and maintain the track formation.

TRACK INFRASTRUCTURE MAINTENANCE REDUCTION STRATEGIES  
THROUGH FORMATION STABILISATION OF HEAVY HAUL ROUTES

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## Abstract

This paper reports on recent investigations undertaken by Queensland Rail into rehabilitation of railway subgrades to assist the Coal & Minerals Infrastructure Division to reduce its operating expenditure on track geometry maintenance works. Geotechnical engineering evaluations of chemical and mechanical stabilization techniques and economic analysis determine the feasibility of subgrade stabilization methodologies as a maintenance practice which will contribute to minimal interference to train operations and improve cost effectiveness. From the preliminary data it has been found that the overall effectiveness of the three formation stabilization techniques trialled will largely be dependent on the operational restrictions and further capitalization costs.

## LIME STABILIZATION OF RAILWAY TRACK SUBGRADE

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## Abstract

This paper reviews the methods of soil stabilization using lime with emphasis on application to railway track subgrade. Prior to any subgrade stabilization project, a field investigation to identify the cause of the track functional condition deterioration and to establish track stratigraphy and soil properties is required as described. The methods for stabilizing soil with lime are admixture, pressure injection, lime columns, and quicklime piles. The various mechanisms involved in the stabilization process are presented as are the advantages and limitations of each method. Admixture stabilization, lime columns, and quicklime piles are the most reliable subgrade improvement techniques. Pressure injection is most suited to on-track construction operations and is the most widely used technique, but soil improvement is uncertain.

## CONE PENETROMETER TESTING FOR TRACK SUBSTRUCTURE DESIGN AND ASSESSMENT

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### Abstract

As part of a program to determine the nature of track substructure problems and to recommend the best remedial action, the Association of American Railroads (AAR) has developed an on-track vehicle that houses a rapid, nondestructive subgrade test apparatus known as a cone penetrometer. The cone penetrometer test (CPT) vehicle has been used to investigate the cause of excessive maintenance requirements on five

AAR member railroads. it also has been used to help select the most effective and economical remedial actions.